





MAYAN numbers


Native Americans also discovered farming and invented ways of writing numbers. The Mayans had a number system even better than that of the Egyptians. They kept perfect track of the date and calculated that a year is 365.242 days long. They counted in twenties, perhaps using toes as well as fingers. Their numbers look like beans, sticks, and shells – objects they may once have used like an abacus.


1  The symbols for 1–4 looked like cocoa beans or pebbles. The symbol for 5 looked like a stick.


2 


3 


4 


5  The sticks and beans were piled up in groups to make numbers up to 20, so 18 would be:


400  NO twenties

20 

1 

400s 

20s 

1s 

$418 + 2040 = 2458$

For numbers bigger than 20, Mayans arranged their sticks and beans in layers. Our numbers are written horizontally, but the Mayans worked *vertically*. The bottom layer showed units up to 20. The next layer showed twenties, and the layer above that showed 400s. So 421 would be:

Mayan numbers were good for doing sums. You simply added up the sticks and stones in each layer to work out the final number. So, $418 + 2040$ was done like this:



ROMAN numbers

Roman numbers spread across Europe during the Roman empire. The Romans counted in tens and used letters as numerals. For Europeans, this was the main way of writing numbers for 2000 years. We still see Roman numbers today in clocks, the names of royalty (like Queen Elizabeth II), and books with paragraphs numbered (i), (ii), and (iii).

Like most counting systems, Roman numbers start off as a tally:

1 is **2** is **3** is

Different letters are then used for bigger numerals:

V **X** **L** **C** **D** **M**

5 **10** **50** **100** **500** **1000**



To write any number, you make a list of letters that add up to the right amount, with small numerals on the right and large on the left. It's simple, but the numbers can get long and cumbersome.



For sums like division and multiplication, Roman numerals were *appalling*. This is how you work out 123×165 :

	D	CC	CCC	CCCC	LLLL	XXXX	VVV
M	DD	CC	CCC	CCCC	LLLL	XXXX	VVV
MM	DD	CC	CCC	CCCC	LLLL	XXXX	VVV
MMM	DD	CC	CCC	CCCC	LLLL	XXXX	VVV
MMMM	DD	CC	CCC	CCCC	LLLL	XXXX	VVV
MMMMM	DD	CC	CCC	CCCC	LLLL	XXXX	VVV
MMMMMM	DD	CC	CCC	CCCC	LLLL	XXXX	VVV
MMMMMM	DD	CC	CCC	CCCC	LLLL	XXXX	VVV
MMMMMM	DD	CC	CCC	CCCC	LLLL	XXXX	VVV
MMMMMM	DD	CC	CCC	CCCC	LLLL	XXXX	VVV

the answer is 20,295

In fact, Roman numbers probably held back maths for years. It wasn't until the amazingly clever Indian way of counting came to Europe that maths really took off.

250–900 AD

500 BC to 1500 AD

To write 49 you need 9 letters:

XXXXXVIII

To make things a bit easier, the Romans invented a rule that allowed you to *subtract* a small numeral when it's on the left of a larger one. So instead of writing **IIII** for 4, you write **IV**. People didn't always stick to the rule though, and even today you'll see the number 4 written as **IIII** on clocks (though clocks also show 9 as **IX**).